



# Volunteer Lake Assessment Program Individual Lake Reports

## SUNCOOK POND, LOWER, BARNSTEAD, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	35,071	Max. Depth (m):	4.9	Flushing Rate (yr <sup>-1</sup> )	22.2
Surface Area (Ac.):	245	Mean Depth (m):	2.9	P Retention Coef:	0.31
Shore Length (m):	5,800	Volume (m <sup>3</sup> ):	2,916,500	Elevation (ft):	551

### TROPHIC CLASSIFICATION

Year	Trophic class
1979	MESOTROPHIC
1992	OLIGOTROPHIC

### KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at [www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm](http://www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm)

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	Limited data for this parameter predicts exceedance of water quality standards or thresholds; however more data are necessary to fully assess the parameter.
	pH	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.
	Oxygen, Dissolved	Encouraging	Limited data for this parameter predicts water quality standards or thresholds are being met; however more data are necessary to fully assess the parameter.
	Dissolved oxygen saturation	Slightly Bad	Data periodically exceed water quality standards or thresholds for a given parameter by a small margin.
	Chlorophyll-a	Good	Sampling data is better than the water quality standards or thresholds for this parameter.
Primary Contact Recreation	Escherichia coli	Very Good	All sampling data meet water quality standards or thresholds for this parameter.
	Chlorophyll-a	Very Good	All sampling data meet water quality standards or thresholds for this parameter.

### BEACH PRIMARY CONTACT ASSESSMENT STATUS

UPPER SUNCOOK LAKE - TOWN BEACH	Escherichia coli	Good	Sampling data commonly meet water quality standards or thresholds for this parameter.
UPPER SUNCOOK LAKE - CAMP FATIMA BEACH	Escherichia coli	Slightly Bad	Data periodically exceed water quality standards or thresholds for this parameter by a small margin.

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	5.17	Barren Land	0.06	Grassland/Herbaceous	0.37
Developed-Open Space	1.9	Deciduous Forest	24.31	Pasture Hay	2.86
Developed-Low Intensity	0.3	Evergreen Forest	13.22	Cultivated Crops	0.45
Developed-Medium Intensity	0.02	Mixed Forest	45.37	Woody Wetlands	2.83
Developed-High Intensity	0.01	Shrub-Scrub	2.44	Emergent Wetlands	0.67



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

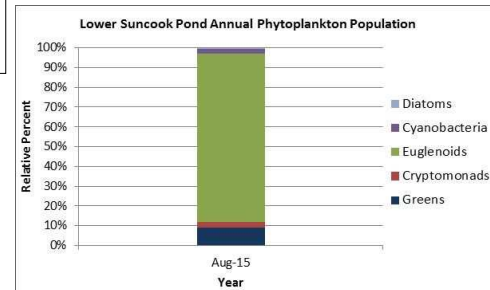
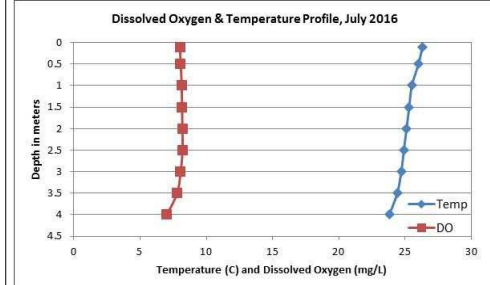
## LOWER SUNCOOK POND, BARNSTEAD

### 2016 DATA SUMMARY

**RECOMMENDED ACTIONS:** Pond water quality is generally representative of borderline Oligotrophic/Mesotrophic, or high quality, conditions. The improving phosphorus levels are a great sign and help to keep algal growth low. Increase monitoring frequency to once per month (June, July, August) to better assess seasonal and historical trends and reduce variability within the data set. Continue to educate residents on ways to reduce nutrient loading and manage stormwater runoff from their properties. Keep up the great work!

#### OBSERVATIONS (Refer to Table 1 and Historical Deep Spot Data Graphics)

- ◆ **CHLOROPHYLL-A:** Chlorophyll levels were within a low range in July, increased slightly from 2015 but remained less than the state median. Historical trend analysis indicates relatively stable chlorophyll levels since monitoring began.
- ◆ **CONDUCTIVITY/CHLORIDE:** Epilimnetic (deep spot) conductivity level increased sharply in 2016 likely due to drought conditions. Epilimnetic and tributary conductivity and chloride levels were slightly greater than the state medians, however not above a level of concern. Historical trend analysis indicates significantly increasing (worsening) epilimnetic conductivity levels since monitoring began.
- ◆ **TOTAL PHOSPHORUS:** Epilimnetic phosphorus level was within an average range for lakes, increased slightly from 2015, and was slightly less than the state median. Historical trend analysis indicates significantly decreasing (improving) epilimnetic phosphorus levels since monitoring began. Tributary phosphorus levels were within low ranges.
- ◆ **TRANSPARENCY:** Transparency measured with (VS) and without (NVS) the viewscope was good in 2016 and improved slightly from 2015. Historical trend analysis indicates stable transparency with high variability between years.
- ◆ **TURBIDITY:** Epilimnetic, Morin's Inlet, Narrows Br. And Narrows. Rd. Inlet turbidity levels were within low to average ranges for those stations. Outlet turbidity level was slightly above average for that particular station.
- ◆ **pH:** Epilimnetic and tributary pH levels were within the desirable range 6.5-8.0 units, however epilimnetic pH has historically fluctuated below the desirable range. Historical trend analysis indicates significantly decreasing (worsening) epilimnetic pH levels since monitoring began.



Station Name	Table 1. 2016 Average Water Quality Data for LOWER SUNCOOK POND, BARNSTEAD								pH
	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m		Turb. ntu	
						NVS	VS		
Epilimnion	6.2	3.75	10	64.8	10	3.45	3.80	1.38	6.57
Morin's Inlet			9	66.0	8			1.43	6.77
Narrows Br. Inlet			9	65.3	9			1.08	6.92
Narrows Rd. Inlet			10	66.0	8			1.22	6.83
Outlet				67.3	11			1.45	6.79

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L  
**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>  
**Conductivity:** 40.0 uS/cm  
**Chloride:** 4 mg/L  
**Total Phosphorus:** 12 ug/L  
**Transparency:** 3.2 m  
**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** > 230 mg/L (chronic)  
**E. coli:** > 88 cts/100 mL – public beach  
**E. coli:** > 406 cts/100 mL – surface waters  
**Turbidity:** > 10 NTU above natural level  
**pH:** between 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Stable	Trend not significant; data moderately variable.
pH (epilimnion)	Worsening	Data significantly decreasing.	Transparency	Stable	Trend not significant; data highly variable.
			Phosphorus (epilimnion)	Improving	Data significantly decreasing.

